

CLAIMS

*Suk*

*D9*

1. A DNA sequence comprising as operably joined components in the direction of transcription, a cotton fiber transcriptional factor and an open reading frame encoding a protein of interest, wherein said transcriptional factor is selected from the 4-4 and the rac promoter sequences.

*Sub  
F27*

2. The DNA Sequence according to Claim 1, further comprising a transport signal encoding sequence from a plant nuclear-encoded gene.

3. The DNA sequence according to Claim 2, wherein said transport signal encoding sequence comprises a plastid transit peptid.

4. The DNA sequence according to Claim 1, wherein said transport signal encoding sequence encodes a signal peptide which provides for transport across the rough endoplasmic reticulum.

*Sub  
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5. The DNA sequence according to Claim 4, wherein said sequence further comprises, 3' to said open reading frame, a vacuolar localization signal.

6. The DNA sequence of Claim 1 wherein said pigment is melanin or indigo.

7. The DNA sequence of Claim 6 wherein said open reading frame is from a bacterial gene.

8. The DNA sequence of Claim 7 wherein said bacterial gene is selected from the group consisting of ORF438, *tyrA*, anthocyanin R gene, anthocyanin C1 gene, *pig*, and *tna*.

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*153/*

9. A DNA construct comprising a promoter for transcription in a plant cell operably joined to said DNA sequence of Claim 1.

10. The DNA construct of Claim 9 wherein said plant cell is a cotton fiber cell.

11. The DNA construct of Claim 10 wherein said promoter is a tomato 4-4 and rac promoter.

*SuS F67* 12. A plant cell comprising a DNA construct of Claim 9.

13. A plant comprising a cell of ~~Claim 12~~.

14. A method of modifying fiber phenotype in a cotton plant, said method comprising:

*full T(X)*  
*M 154/*

transforming a plant cell with DNA comprising a construct for expression of a protein in a pigment biosynthesis pathway, wherein said construct comprises as operably joined components:

a transcriptional initiation region functional in cells of said plant tissue,

an open reading frame encoding a protein of interest, and

a transcriptional termination region functional in cells of said plant tissue,

wherein said plant tissue comprises a substrate of said protein; and

growing said plant cell to produce a plant comprising said tissue, wherein said protein reacts with said substrate to produce said pigment.

15. The method of Claim 14 further comprising a transport signal encoding sequence from a plant nuclear-encoded gene.

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~~16~~ 17. The method of Claim ~~15~~ <sup>17</sup> wherein said transport signal encoding sequence encodes a signal peptide which provides for transport across the rough endoplasmic reticulum.

~~17~~ 18. The method of Claim ~~16~~ <sup>15</sup> wherein said DNA comprises constructs for expression of two proteins in a pigment biosynthesis pathway, wherein each of said constructs comprises components i) through iv), and wherein said two proteins are not encoded by the same gene.

~~18~~ 19. The method of Claim ~~17~~ <sup>16</sup> wherein said DNA comprises constructs for expression of two proteins in a pigment biosynthesis pathway, wherein each of said constructs comprises components i) through iv), and wherein said two proteins are not encoded by the same gene.

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~~19~~ 20. The method of Claim ~~18~~ or ~~19~~ <sup>17</sup> <sup>18</sup> wherein said pigment is <sup>2</sup> melanin and said proteins are encoded by *tyrA* and *ORF438*.

~~20~~ 21. The method of Claim ~~18~~ <sup>17</sup> wherein said pigment is indigo and said proteins are *tna* and *pig*.

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~~21~~ 22. The method of Claim ~~18~~ <sup>17</sup> wherein said pigment is anthocyanin and said constructs comprise the anthocyanin R and C1 regulatory genes.

~~22~~ 23. The method of Claim ~~15~~ <sup>14</sup> wherein plant tissue is a cotton burr.

~~23~~ 25. A recombinant DNA construct comprising the cotton tissue transcriptional sequence shown in Figure 2.

~~24~~ 26. A recombinant DNA construct comprising the cotton tissue transcriptional sequence shown in Figure 5.

~~25~~ 27. An isolated DNA encoding sequence of Figure 1.

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*157* 2628. An isolated DNA encoding sequence of Figure 4.

*rule  
75(f)* 2729. The method of Claim *15* wherein said protein of interest  
is involved in the synthesis of a plant hormone.

*cold*  
*138*      *cold*  
                *C7*  
                *X*  
                *D2*